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RANGER 'RITHMETIC

for

FOURTH

GRADE
TEACHERS

U.S. DEPARTMENT OF AGRICULTURE   •   FOREST SERVICE

Nat   or over three centuries one
Americaı   on to the next generation.
With eac   ler. Everyone knows that
we cann   indefinitely.

Wi‘   oil, we can take out but we
cannot ı   orests, we can take out and
we CAN ALSO PUT IN!   Forest conservation is a matter of wise use.

Today's school children will soon be owners and custodians of forests.   How
wisely they use them will depend, in a large measure, on what they learn about
conservation.

The USDA Forest Service hopes that the mathematics problems in this
pamphlet will be practical aids to teachers who are integrating conservation
in mathematics, science, social studies, and perhaps other subjects as well. They
may also be valuable to textbook authors and publishers who are including more
and more conservation in their publications.

Problem No. 1

A carpenter wants 54 short boards of equal length. He can get 6 of them by sawing up a long board. How many of the long boards would he need for 54 short boards?

(Solution: 9 long boards)

The production of lumber is still the greatest use made of our Nation's sawtimber.

Problem No. 2

Allen's family lived on a farm which had a woods on it. His family gathered holly branches and berries, and made wreaths for the Christmas season. The wreaths were sold in the market in town and brought $1.25 each. Allen's family took home $87.50. How many holly wreaths did they sell?

(Solution: 70 wreaths)

Gathering holly and making wreaths provides work for many people during the Christmas season. This is especially true in some Southern States.

Problem No. 3

There are 5 members in Allen's family—his father, mother, older sister, younger brother, and himself. They agreed to divide the $87.50 equally. How much money did each receive?

(Solution: $17.50)

Such healthful outdoor projects can bring a cash income to farm families in many areas.

3

Problem No. 4

Allen's father bought some baby pheasants to raise for a hunting preserve nearby. He paid $43.80 for the chicks and sold them when grown to the hunt club for $91.75. How much more did he get for the pheasants than he paid for them?

(Solution: $47.95)

There are many ways a landowner can earn additional income from his forest land.

Problem No. 5

Allen's father hired a neighbor to help him build picnic tables in a recreation area he was developing. The neighbor worked 2 days. The first day he earned $19.50 and the second day he earned $22.00. How much did he earn altogether?

(Solution: $41.50)

Recreational activities make jobs and bring income to the community.

Problem No. 6

Allen's father and the neighbor split logs for seats in the picnic area. They used 3 half-logs on each side of a picnic table. There were **7** picnic tables. How many logs did they need for seats? How many half-logs?

(Solution: 21 logs; 42 half-logs)

A woodland owner who has woodworking equipment can do much of his own building in his spare time.

4

Problem No. 7

Allen helped his father build a fence around the recreation area out of poles cut from part of his woods which needed thinning. The fence was the post-and-rail type with 3 rails. It was 480 feet long. He used 180 poles for rails. How long was each rail?

(Solution: 8 feet)
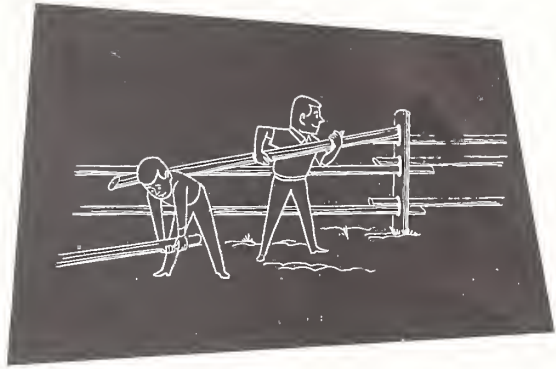
If crowded young trees are thinned out, the remaining trees have more room, get more light and water, and will grow faster.

Problem No. 8

The woods on Allen's home farm contained a large number of sugar maple trees, which his father tapped for maple sirup. In addition to what they used and gave to friends, his father sold 84 gallons at $2.29 per gallon How much did he get for the maple sirup he sold?
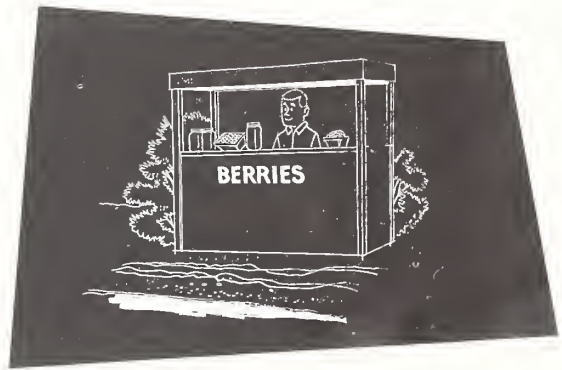
(Solution: $192.36)

There are many edible products in our forests that can be harvested for profit. (Have students look up the word *edible*.)

Problem No. 9

At his father's roadside stand Allen sold 175 quarts of berries one week and 218 quarts the next week. How many quarts did he sell in the 2 weeks?

(Solution: 393 quarts)

Wild berries are a woodland product which finds a good market in many localities.

Problem No. 10

At 60¢ a quart, how much money did Allen get for the berries he sold in Problem No.9? *(Solution: $235.80)*

There are many successful businesses based on the marketing of one or more edible woodland products.

Problem No. 11

Allen's father made $3,700 in one year from his woodlot, and $4,850 in another. How much more did he make in the second year than he made in the first? *(Solution: $1,150)*

Woodland owners are looking to multiple use of their forests to increase their annual income.

Problem No. 12

In 1964 Allen helped his father cut the first trees out of their forest plantations which had been planted in 1922. How old were the trees they cut? *(Solution: 42 years)*
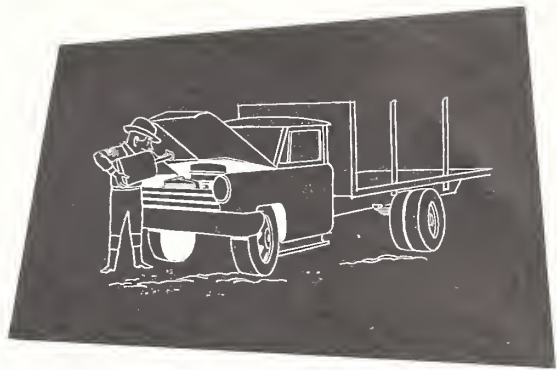
**In some parts of the country pulpwood can be harvested from trees 15 to 20 years old.**

Problem No. 13

The Forest Ranger's truck needed to have anti-freeze put in the radiator for winter. He said the cooling system held 6 gallons, and one-third of it should be anti-freeze to make it safe. How much anti-freeze was needed? *(Solution: 2 gallons)*

A Ranger's truck must be ready to go at all times, like a doctor's car, in case of a fire or other emergency.
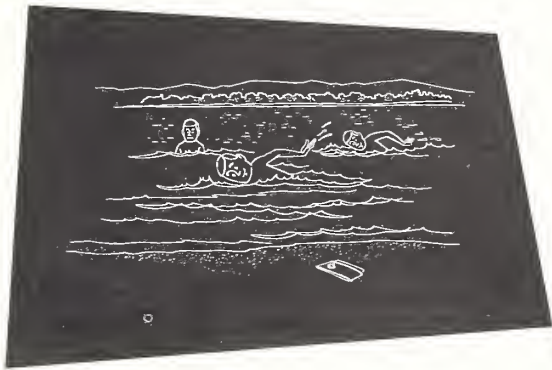
Problem No. 14

Last summer, Allen attended a Boy Scout campout. The lake on the recreation area could be used only by Scouts who could swim. There were 63 Scouts in the camp and the leader said one-ninth of them could not swim. How many Scouts could not swim?
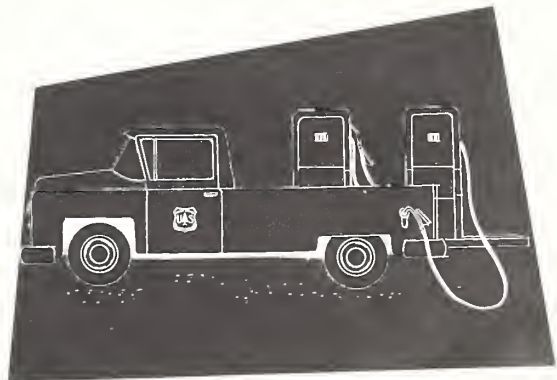
(Solution: 7 Scouts)

In ever-increasing numbers people are turning to the out-of-doors for recreation.

Problem No. 15

The Ranger and his assistant started out on a trip of 975 miles. They stopped for gasoline after going 270 miles. How many miles did they still have to go? *(Solution: 705 miles)*
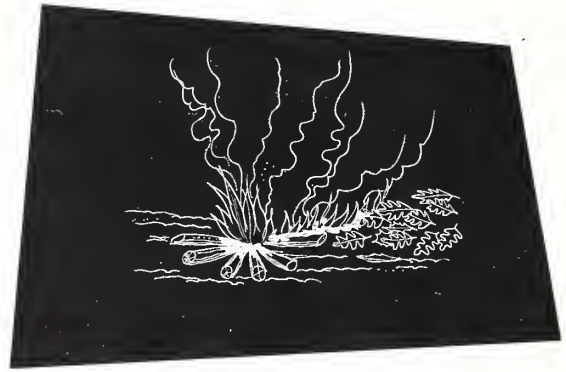
There are 50,000 miles of roads in the National Forests. Practically all of them are open to the public.
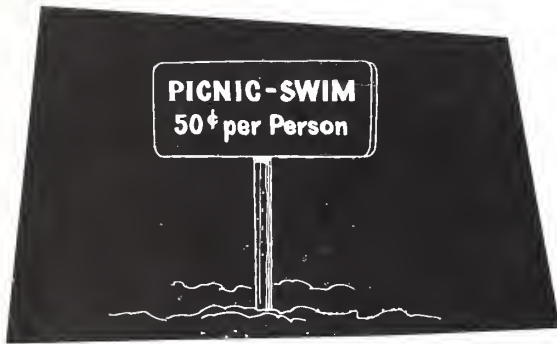
Problem No. 16

Two careless campers left camp without putting their fire completely out. A wind came up and started a forest fire which destroyed 198 acres of timber before it was put out. If the timber was worth $125 per acre, what was the total loss?

(Solution: $24,750)

Never leave a campfire until every spark is out—"Dead Out!" Pour water on it as you stir up the coals. Then feel it. If there is no heat, the fire is out.

Problem No. 17

Entrance fees for the picnic and swimming area were 50¢ per person. At the end of one Sunday, Allen and his father had taken in $155.00. How many people paid to use the area that day? *(Solution: 310 people)*
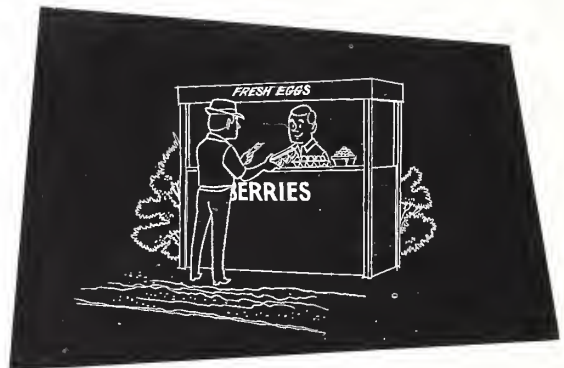
A swimming pool can be a profitable addition to a campground or picnic area and will attract more customers.

Problem No. 18

One family spent all day Saturday at the picnic area. Before they left, they bought 2 quarts of berries from Allen for $1.00 and 2 dozen eggs at 59¢ a dozen. How much did the eggs cost? *(Solution: $1.18)*

Users of recreation areas are potential "customers" for other farm and forest products. (Have students look up the word *potential*.)
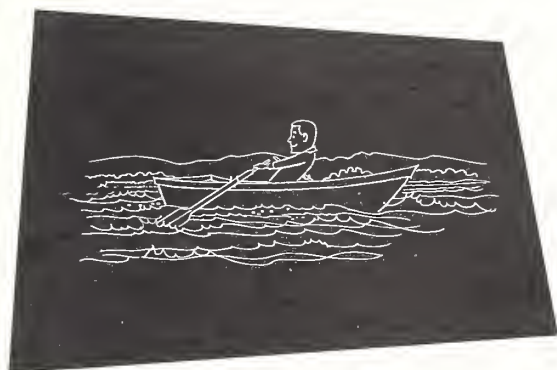
Problem No. 19

Allen's father had several riding horses and Allen had two ponies. The horses rented for $2.00 an hour and the ponies for 50¢. A family of 4 used 2 horses and the 2 ponies for 2 hours. How much did the ride cost them?

(Solution: $10.00)

Riding is popular and healthful recreation. It can be an added income to the landowner. (Have students look up the word *recreation*.)

Problem No. 20

Allen and his father had 9 rowboats on the lake. They rented them to fishermen at 25¢ per hour or $3.00 per day. One Saturday they took in $24.00 from fishermen who used the boats all day. How many boats were out all day?

(Solution: 8 boats)

Fishing is always popular and a boat rental enterprise does well on good fishing water. (Have students look up the word *enterprise*.)

Problem No. 21

Allen and his father were building a fence to keep cattle from grazing in their woods. They were using 7-foot posts and putting $\frac{3}{7}$ of each post in the ground. How many feet of each post were above ground? Below ground?
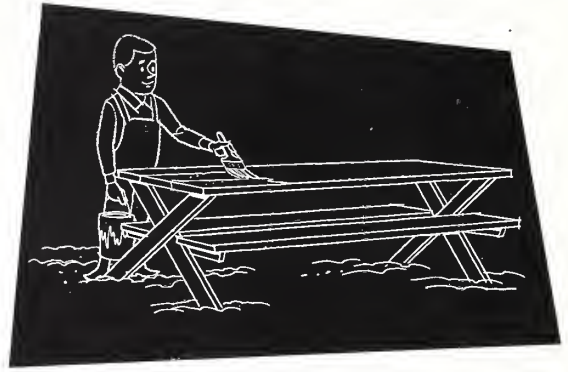
(Solution: 4 feet and 3 feet)
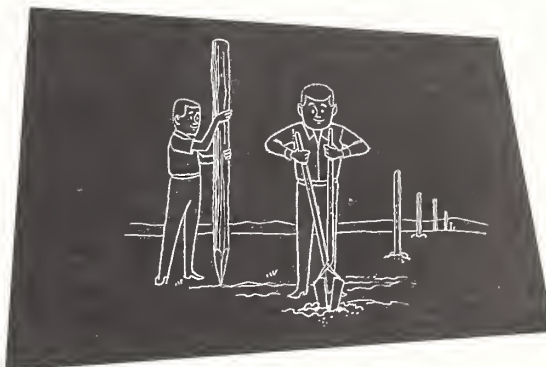
It is usually better to keep livestock (cattle, sheep, hogs) out of hardwood forests. However, in some of the pine forests of the West and South controlled grazing is permitted.

Problem No. 22

There were 9 picnic tables in the recreation area. Two-thirds of them were newly painted. How many tables still needed to be painted?
(Solution: 3 tables)

Recreation has become the public's number one interest in our forest lands.

Problem No. 23

The game manager turned loose 300 bobwhite quail on the hunting preserve. During the hunting season the members of the hunting club took 200 of the birds. What fraction of the original number of quail were taken?
(Solution: ⅔)

Many conservation experts consider trees and game as twin crops. (Have students look up the word *conservation*.)

Problem No. 24

To produce just one bushel of corn requires 6,250 gallons of water. A bushel of wheat needs 7,500 gallons. How much more water does it take to produce a bushel of wheat than a bushel of corn? *(Solution: 1,250 gal.)*

Without water there would be no food. One of the most important functions of the forest is to supply water by protecting watersheds. (Have students look up the word *watershed*.)

Materials To Help Teach Forest Conservation

Suggestions for Integrating Forestry in the Modern Curriculum, FS–62. Free. 4 pages. A columnar chart showing how forestry can be integrated into the several subjects at the elementary, junior high school, and senior high school levels.

In Your Service—The Work of Uncle Sam's Forest Rangers, AIB–136. 25 cents. 24 pages. Liberally illustrated. Facts about the work performed by the men on the ground who protect, manage, and improve the National Forests and their resources for the benefit and use of the people.

You and Forest Fires, PA–64. Free. 16 pages. Shows that 90 percent of our forest fires are caused by man's carelessness and thoughtlessness. Tells how they can be prevented.

Your Water Supply and Forests, AIB–305. 15 cents. 18 pages. Facts about water sources. It tells what we must guard against and what we can do to assure safe, dependable water supplies.

POSTERS (Colored)

How a Tree Grows, FS–8. 20 cents. 16 by 21 inches.

What We Get From Trees, M–5293. 20 cents. 40 by 28 inches.

What We Get From Forest Land, FS–27. 30 cents. 40 by 28 inches.

Single copies of the above items are free to teachers. For quantity purchases of priced items, order direct from Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402, and enclose money order or check payable to Superintendent of Documents.

Other CONSERVATION TEACHING AIDS are available to teachers on request. Address your inquiry to Forest Service, U.S. Department of Agriculture, Washington, D.C. 20250, and ask for *FS–28, Materials To Help Teach Forest Conservation*.